Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Union Carbide Corp - St Charles Operations, Acrylics 1 Unit
Taft, St. Charles Parish, Louisiana
Agency Interest Number: 2083
Activity Number: PER20040020
Proposed Permit Number: 513-V2

I. APPLICANT

Company:
Union Carbide Corp - St Charles Operations
PO Box 50
Hahnville, Louisiana 70057-0050

Facility:

St. Charles Operations, Acrylics 1 Unit
355 Hwy. 3142 Gate 28, Approximately 2 miles west of Hahnville, on the west bank of the Mississippi River, off LA Highway 3142 at corner of LA Hwy 18. Approximate UTM coordinates are 746.184 km East and 3,319.222 km North, Zone 15.

II. FACILITY AND CURRENT PERMIT STATUS

Union Carbide Corporation, a subsidiary of the Dow Chemical Company, owns and operates a chemical manufacturing facility in St. Charles Parish near Taft. The St. Charles Operations (SCO) is an integrated petrochemical manufacturing complex, converting petroleum-based raw materials into a variety of basic building block, intermediate chemicals and plastics. The products from this facility eventually wind-up in thousands of everyday household, business, and consumer products. The facility as a whole started operation before 1969.

The Acrylic 1 Unit consists of the "sub units" acrylic acid and acrolein. The production unit produces acrylic acid and acrolein by catalytic oxidation of propylene.
Propylene, air and steam are mixed in prescribed rations and fed to the reaction section. The outlet gas from the reaction system is a mixture of acrylic acid, by-products, and unreacted propylene and propane.
Union Carbide Corp - St Charles Operations is a designated Part 70 source. Several Part 70 permits have been issued to the operating units within the complex. These include:

Permit No.	Unit or Source	Date Issued
2257-V2	TB1 and TB2 Units	12/28/2006
1909-V0	Polyglycols (Higher Glycols Unit)	10/21/1998 *
2814-V0	Methyl Glycol Ethers (MGE)	10/31/2002
1912-V0	Specialty Products Unit	3/12/2003

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Permit No.	Unit or Source	Date Issued
2350-V3	LP-3 Unit	12/30/2003
2876-V0	Unit 9	6/7/2004
2858-V0	PXC Unit	7/8/2004
2104-V0	Environmental Protection Dep. (EPD)	8/11/2004
2422-V1	Olefins I & II	9/30/2004
476-V0	Oxide I	3/7/2005
2343-V0	Energy Systems	6/27/2005
1082-V0	Maintenance and General Facilities	9/10/2005
2421-V0	Amines Plants	11/10/2005
2656-V0	Olefins Distribution/Site Logistics Units	3/13/2006
2214-V0	LP-6	3/27/2006
2446-V0	Unit 8 (EXP)	5/1/2006
373-V0	Oxide II	5/18/2006
477-V0	Unit 5 (Amines I)	6/08/2006
2254-V0	Acrylics 2	6/19/2006

* The facility has submitted a timely renewal application for this unit.

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III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire was submitted by UCC on September 20, 2004 requesting a Part 70 operating permit renewal. Additional information dated August 17, October 10, 31 and November 3, 2006 was also received.

Project

There is no project associated with this renewal permit application. No physical modifications or changes in the method of operation that would result in an increase of emissions are being incorporated into the permit. The following updates have been included in this permit.

- Update of AP-42 factors for combustion sources.
- Update of Riedel constants for tank source emissions estimates.
- Increase of average lb/hr acetaldehyde emissions for Emission Point (EP) 2601 (Thermal Oxidizer CAP) based on test data.
- Addition of General Condition XVII Activities.
- Name change of Emission Point 224 from 'Vent Scrubber' to 'IPE Distillation Unit (Columns D and E)'.
- Name change of 'Column A' to 'Acid Scrubber'.
- Reevaluation of regulatory applicability for each source.
- Increase the alternate operating scenario to 720 hours (1 month) per year. These emissions are covered under the Thermal Oxidizer CAP. The scenario happens during times that the thermal oxidizers are down (such as during turnarounds, oxidizer maintenance, malfunctions, upsets, etc.) and the sources normally venting to the thermal oxidizers, vent to the flare instead as the oxidizers are down.

Proposed Permit

Permit 513-V2 will be the renewal Part 70 operating permit for the Acrylics 1 Unit.

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Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	9.04	7.02	-2.02
SO_2	0.58	0.55	-0.03
NO_X	205.40	199.20	-6.20
CO	88.44	108.31	+19.87
VOC	54.45	49.59*	-4.86
Sulfuric Acid	-	<0.01	+<0.01
Acetone	-	0.04	+0.04

*Includes 15.68 TPY of Toxic Air Pollutants

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

For the applicability and exemptions of selected subject items at the unit, refer to Section X - Table 1. Applicable Louisiana and Federal Air Quality Requirements, and Section XI -Table 2. Explanation for Exemption Status or Non-Applicability of a Source, of the proposed permit.

Prevention of Significant Deterioration/Nonattainment Review

PSD review is not required with this renewal.

Streamlined Equipment Leak Monitoring Program

The Acrylics 1 unit is not included in the streamlined program. Acrylics 1 will comply with each regulation as applicable.

MACT Requirements

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The applicable MACT requirements for the different sources are described in the Specific Requirements section of the proposed permit.

Air Quality Analysis

Dispersion Model Used: ISCST3

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
Acrylic Acid *	8 Hour Avg.	*	140.00 $\mu g/m^3$

* To determine compliance with the Louisiana Ambient Air Standards (AAS) for acrylic acid, permittee shall establish ambient monitoring for this pollutant in accordance with a monitoring plan and operating procedures to be approved by the Office of Environmental Assessment. The monitoring plan and operating procedures shall be submitted within 45 days of the permit issuance, and the monitoring should commence as soon as practical but no later than 90 days from the date of permit issuance. Monitoring sites should be based upon consideration of the maximum off site concentrations as predicted by dispersion modeling of Union Carbide's permitted emissions alone and of permitted emissions from all sources in the Union Carbide Area of Inclusion (AOI). If monitoring indicates off-site levels of acrylic acid above the AAS, further remedial action will be required to achieve compliance with the ambient air standards; permittee shall submit an application for permit modification within 60 days after completion of monitoring.

The monitoring plan was submitted April 27, 2006 and the first monitoring sample was collected June 10, 2006.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

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V. PERMIT SHIELD

No permit shield requested.

VI. PERIODIC MONITORING

The following pieces of equipment will be monitored periodically for certain parameters.

- The Flare, EQT778, will have the flow, organic HAP, presence of a flame, presence of a leak, and cars seals monitored and/or inspected periodically.
- The Acetaldehyde Loading, EQT815 will have the VOC monitored for leaks during loading.
- Fugitives, FUG16, from pumps, agitators and compressors will be monitored visually or with an audible alarm daily. Including the following.
    1. The flow through closed-vent system (bypass lines) will be monitored every 15 minutes.
    2. Organic HAPs from pumps, compressors, pressure relief devices, valves, closed vent systems, agitators, and connectors will also be monitored.
    3. UCC to follow established monitoring plan under the LDAR Program which includes visual checks and periodic monitoring of specified components within the LDAR Plan.
    4. Total VOC from valves, process drains, compressors seals, and pressure relief valves will also be monitored by 40 CFR 60, Appendix A, Method 21 quarterly or annually depending on the equipment.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

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New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_X) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.